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ABSTRACT

A review of 23 studies, including doctoral dissertations, statewide assessments, national surveys, journal articles, technical reports, books, and unpublished papers, sought to integrate empirical findings concerning the impact of leisure time television viewing on student achievement in grades K through 12. For each study, the reviewers coded the characteristics of the sample, type of outcome, quality of the study, method of collecting viewing data, mean hours of viewing, and strength and direction of observed relationships. A total of 274 effects were coded, converted to a common measure through techniques of research synthesis, and subjected to analysis of variance. Results indicate that the overall effect of hours of television viewing is negative, though small. Effects are slightly positive for up to ten hours of viewing a week, but become negative and increasingly deleterious for up to 35 or 40 hours a week. Females and children of high IQ are more adversely affected than other groups. An annotated bibliography and descriptive statistics are appended. (WD)

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The Impact of Leisure-Time Television on School Learning:

A Research Synthesis (Preliminary Version)

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The Impact of Leisure-Time Television on School Learning:
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Abstract

The purpose of this research synthesis was to integrate empirical findings concerning the impact of leisure time television viewing on student achievement in grades K-12.

Studies were assembled from searches of various educational and psychological review articles. Thirty-two studies were located, but only 23 could be used. These included several doctoral dissertations, statewide assessments, national surveys, articles from refereed journals, technical reports, books, and unpublished papers.

For each study, characteristics of the sample, type of outcome, quality of the study, method of collecting viewing data, mean hours of viewing, and strength and direction of observed relationships were coded. A total of 274 effects were coded from the 23 studies.

Techniques of research synthesis were applied to convert all 274 effects to a common metric. The dependent variable was the correlation between amount of viewing and achievement. The independent variables were the various characteristics coded for each study. Analysis of variance was the primary data analytic technique used.

Results indicated that the overall effect of hours of televiewing on achievement is negative, but small ($-.05$). Regardless of the sample size, year and location of the research, the effect remains consistent. The overall effect, however, is not constant across the range of viewing times. Up

to ten hours a week of viewing the effects are slightly positive, but beyond ten hours the effects are negative and increasingly more deleterious until viewing time reaches thirty-five to forty hours, beyond which additional viewing has little effect. The impact of hours of televiewing differs such that females and high IQ children are more adversely affected than other groups.

The Impact of Leisure-Time Television on School Learning:

A Research Synthesis

The influence of mass media on social processes is undisputed. Historically, each of several forms of media, including novels, movies, comic books and television, have been identified simultaneously as "villain/redeemer" (Morgan and Gross, 1980, p.2). During the past 30 years television has clearly been cast in such a dual role. It has been regarded by some proponents as a curative for environmental limitations and a stimulus to creativity. Opponents of TV, however, claim it produces shortened attention spans and a decreased ability to process written information. Public debate over the costs and benefits of television viewing has been an impetus to conducting empirical research studies. Most recently, television more than any other form of media, has been identified as a potential contributing factor in the achievement test score decline (Harnischfeger and Wiley, 1976). In the light of such controversy a research synthesis was conducted on the impact of leisure-time television on the school learning of children in grades kindergarten through 12. Walberg (1980) identified the media as one of ten factors that influence school achievement. For purposes of this study, only television's impact was examined, as its effects are of more immediate concern to the educational community.

The fact that television affects school achievement is not challenged, but research efforts to examine these effects have uncovered inconsistent results among studies and even within single studies. The variety of research methods, sample sizes, criterion measures and statistics reported, have led to conflicting interpretations of the effects of television viewing on children's school achievement. The disparate nature of these studies is made explicit by taking a

historical perspective on the types of research designs employed. Early studies compared students with access to television to students from homes where television was unavailable. Later studies compared the amount of time spent in leisure-time television viewing and school achievement. Examples of discrepant results are easily found and can be exemplified by discussing a few representative studies. Greenstein (1954) examined the relationship between TV viewing and school grades by comparing third through sixth grade children who watched TV with those who did not. Results indicated that the performance of the TV group was consistently higher than the non-TV group. Similarly, Schramm, Lyle and Parker (1961) in a comparison of Radiotown and Teletown (the latter had TV, the former did not) reported significant differences in vocabulary test scores of first graders, favoring students in Teletown. These differences were found for high and medium IQ students from each town, but not for the low IQ students. Results showing little impact of television were reported by Himmelweit, Oppenheim and Vince (1958). They suggested that on the whole, school performance of viewers was level with or only slightly lower than that of the non-viewers.

In contrast, researchers have also reported negative relationships between amount of television viewing and achievement. Scott (1956) found that those children who viewed more television achieved less proficiency in total achievement than those children who viewed less. LaBlonde (1966) in an investigation of fifth grade students reported that measured achievement and televiewing bore an inverse relationship to each other: the higher the achievement test score, the less time spent watching television. Morgan and Gross (1980) found that heavier television viewing was significantly related to lower achievement scores, with reading comprehension being the area of most negatively and sig-

nificantly associated with television viewing. Additional negative evidence concerning the influence of leisure viewing was provided by Hornik (1978). This study, conducted in El Salvador, examined the impact of TV use on cognitive growth in reading skills of 7th-9th grade students. Following three separate cohorts over 2 to 3 year periods revealed consistent negative effects on reading improvement for all three groups, and even a negative, effect on general ability for one cohort.

Further disparity among studies is created by the great variety of methods used for measuring televiewing. These methods range from a simple question ("How much time do you spend watching television?") to elaborate diaries requesting information on all activities a student engages in between leaving school and bedtime. While some studies obtained viewing estimates from students, others utilized parents' estimates of their child's viewing time. Occasionally, student estimates were validated by personal interviews with the parent or the child.

In the light of differences in research design, results and methods of collecting data, the corpus of studies relating televiewing to achievement has left several questions unanswered. First, there is agreement that TV affects achievement, but what is the magnitude and direction of the effect? Second, are girls affected more than boys or vice versa? Third, are younger children more susceptible to the effects of televiewing? Are certain subject areas affected more than others? Is there a differential effect on high vs. low achievers? Is there a differential effect for students with high IQs vs. low IQs? Finally, has the impact of televiewing changed over the years?

In order to answer these and other questions the tools of research synthesis were applied. These techniques included the work of G.V. Glass (1978)

on meta-analysis, as well as contributions by Gage (1978), Jones and Fiske (1953), Rosenthal (1976) and Light and Smith (1971). Using these techniques, the research relating leisure-time televiewing to school learning was synthesized. In this synthesis no new data were collected. Instead the data points were correlation coefficients relating television to school achievement. By employing these techniques it was possible to relate the magnitude and direction of the televiewing-achievement relationship to characteristics of the studies like grade level, geographical location and, sex of the sample. In addition, methodological factors such as use of significance tests, assumptions of linearity and use of random sampling were examined. By employing the techniques of research synthesis, it was possible to explore the substantive and methodological characteristics of research on the impact of leisure-televiewing.

Method

Sample of Studies

A search was made of Review of Educational Research, Review of Research in Education, Annual Review of Psychology for the years 1967 through 1979, Current Index of Journals in Education (CIJE) for the years 1974-79, and a computer search of Psychological Abstracts, ERIC and CIJE for the years 1963-1978 for published articles, books, and unpublished technical reports. Additional studies were identified in bibliographies of studies located through these indexes as well as suggestions from other researchers. Studies which reported empirical findings concerning the impact of leisure time television viewing on student achievement in grades kindergarten through twelve, were selected. Thirty-two studies were located but only 23 could be used. Studies were discarded for the following reasons: inadequate descriptive statistical

information to permit calculation of effect sizes or correlations, e.g. Riddler (1963) and Witty (1966, 1967); effects were limited to a single program rather than the effects of total leisure time viewing (e.g. Sesame Street Evaluations); and studies, such as Hornik (1978) which examined access to TV, since recent acquisition of TV was confounded with socioeconomic status. The 23 studies included: four doctoral dissertations, three state wide assessments, two national surveys, articles from referred journals, technical reports, books, and unpublished papers. They represented four nations- England, Japan, Canada and five geographical regions of the United States. Though income and racial group were not coded and used in the analyses, high, middle and low income students as well as white, black, Oriental and Hispanic students were represented in these studies. The search and selection procedures yielded 274 effects from a combined student population of 87,025.

A summary of the key features of the 23 studies is presented in Table 1. Information on each study includes sample size and description, dependent measure, substantive results, control variables, test for curvilinearity and determination of viewing time and method of collecting data.

Insert Table 1 about here

The studies synthesized spanned a period of 26 years, with the first conducted in 1954 and the most recent in 1980. Sample sizes in these studies ranged from 67 students to 33,233 in a national survey. The criterion measures employed included not only standardized achievement test scores, but also criterion referenced tests, grade point averages, percentiles and teacher ratings. The types of data analysis employed include methods as simple as use of cross-tabulations and frequencies to more complicated techniques such as cross-

lagged panel correlations. Researchers used several diverse methods for collecting viewing information including diaries, program checklists, interviews, or a single item embedded in a larger questionnaire. Table 2 contains a list of the 23 studies synthesized, the mean correlation standard deviation calculated from each study and the number of correlations each study contributed to the analyses.

Insert Table 2 about here

Coding Information

Information coded for each effect included author's name, year of study, dependent measure(s), basic methodology, sample characteristics, quality of the study, statistic reported, presence of controls, determination of viewing time, correlation and mean hours of viewing for comparison. Dependent measure refers to the type of achievement reported i.e. reading, language arts, vocabulary, spelling, mathematics, social studies, science, general intelligence, total school achievement and study skills. Type of information collected refers to whether the data were achievement test scores (raw scores on a locally standardized test or standardized scores), grade point average, individual course grades, IQ scores, reading group, grade equivalents, percentiles, teacher ratings, ranked achievement scores.

Basic methodology was coded as either true experiment, quasi-experiment or survey. Sample characteristics included age, sex (coded as male, female, or mixed), IQ (coded as high, medium, low or unrestricted if levels were not reported), prior achievement (coded as high, medium, low or unrestricted), geographical location, and grade levels which were grouped into class intervals, ie. primary (grades K-3), elementary (4-6), junior high (7-8) and high school (9-12).

Quality of the study included: indications of sample size (grouped according to the following categories: 0-60, 61-100, 101-250, 251-500, 501-1,000 and above 1,000), use of significance tests, whether or not linearity was assumed, if random sampling was employed, and the statistic reported for the comparison (percents, means and standard deviations, simple correlations, part correlations, partial correlations, simple regression coefficients, F ratios, t tests, Chi-squares, frequencies or cross-tabulations or normalized S).

In addition, presence of controls indicated whether or not IQ, prior achievement or sex, had been used as a covariate or as blocking variables in the studies reported.

Two variables were coded to provide information on how estimates of viewing time were determined for each study. First, information was coded indicating who provided the estimates of hours of viewing (parent, child or both). Second, the method used to collect the viewing data was coded: diary, questionnaire completed by the child, questionnaire completed by the parent, program checklist, ownership of TV or residence in a TV reception area and combination of methods.

The final variable, mean hours of viewing, was coded for each comparison indicating the number of hours viewed per weekday, per weekend and per week. Most studies did not report all three. Whatever information was available was coded. Occasionally it was necessary to calculate average viewing times of a study or a comparison. In the analyses, hours of viewing were categorized as follows: 0-10, 10.1-15, 15.1-20, 20.1-25, 25.1-30, 30.1-35, and over 35.

In order to summarize statistically the results of the various studies, it was necessary to express all of these results in terms of some common scale, or metric. Because televiewing and achievement are both continuous variables, a natural choice was to use product-moment correlations, as suggested by Glass (1978). Unfortunately, only 7 of the 23 studies reported actual product-moment correlations computed between televiewing and educational outcomes. (Correlations were nonetheless reported in more of the studies than any other single statistic. The next largest category was comprised of six studies reporting means and standard deviations.) For those studies reporting statistics other than correlations, it was necessary to estimate the correlation using whatever data were available. In most cases, the conversion formulas presented by Glass (1978) could be used for this purpose, and for the few remaining statistics, comparable conversion formulas were found or derived.

For purposes of this research synthesis, correlation coefficients had one important limitation: The correlation expresses only the linear relationship between two variables. There was reason to believe, based on some of the studies included, that the relationship between viewing and achievement might be curvilinear in form (Greenstein, 1954; Kohr, 1979; and Mayeske, 1969). Thus, individual correlations might not be adequate summaries of the information available from some of the studies. This could be seen most clearly in those studies where mean achievement scores were reported for a series of televiewing levels (e.g., less than 10 hours per week, 10-15 hours per week, etc.). It was evident that in some such cases, the graph of achievement as a function of televiewing was not a straight line. The problem of representing these more

complex relationships so that they could be summarized across studies might have been intractable, except for one important fact: Unlike most of the variables of concern in education, weekly hours of televiewing were automatically measured on a ratio scale, with a true zero point (no viewing at all) and equal-interval units (e.g., hours). Thus, average amounts of viewing were directly comparable across studies in a way that average scores on the various achievement tests used in different studies were not.

Because levels of televiewing were comparable in this way, it was possible to use a series of several correlation coefficients to describe a curvilinear televiewing-achievement relationship. Where achievement scores were reported for a series of televiewing levels, a correlation was estimated using the first and second categories, another correlation was estimated using the second and third, then the third and fourth, etc. Each of these represented the strength of the televiewing-achievement relationship for a different televiewing level. In other words, if a graph were drawn showing the relation of achievement to televiewing, the series of correlations would tell the steepness of adjacent sections of the graph. To identify the various correlations with specific sections of that graph, the mean viewing time across each adjacent pair of categories was coded along with the corresponding estimated correlation. In the same way, a mean viewing time was coded for the remainder of the 277 of the correlations or estimated correlations from the various studies. Thus, even though each individual correlation could only represent a linear relationship, by identifying these individual correlations with different locations on the televiewing-achievement curve they could be used together to describe a relationship that might not be linear.

Data Analysis

Once coding was complete, a series of statistical analyses were performed to determine which of the coded study and sample characteristics were related to the size of the viewing-achievement correlations. Most of these analyses addressed substantive questions, e.g., "Are televiewing effects the same for males and females?" or "Is the televiewing effect on achievement larger in the lower ranges of IQ?" Some, however, addressed methodological questions bearing upon the research synthesis itself, e.g., "Are there systematic differences in the size of correlations estimated by different methods?" or "Do studies of poorer quality suggest a different televiewing-achievement relationship than studies that used better methods?" In all of these analyses, the coded correlation coefficients comprised the dependent variable. For example, means of correlation coefficients and F-tests of differences among these means were calculated. Other coded characteristics of studies and samples served as independent variables.

Stem-and leaf display and elimination of outliers

As a preliminary to more formal analyses, the 277 correlations were displayed in a stem-and-leaf diagram as described by Tukey (1977). This display is shown in Figure 1. In addition to providing all the information of a histogram,

Insert Figure 1 about here

the stem-and-leaf diagram displays the actual value of each correlation to two decimal places. The first digit (the "stem") appears to the left of the vertical line and the second digit (the "leaf") appears to the right. For example, the leaves "01124" to the right of the stem ".3" represent five

correlations: .30, .31, .31, .32, and .34. Also displayed in Table 1 is the "five-point summary" of distribution, consisting of minimum (*), first quartile (H), median (M), third quartile (H) and maximum (*).

Figure 1 reveals that the majority of the correlations lie between -.30 and +.20, but the range extends all the way from -.98 to +.50. To determine whether some of the extreme values should be rejected as outliers, a test by Pearson and Stephens (1964) was applied. Under the assumption that the sample of coefficients was drawn from a normally distributed population, the null hypothesis that the three extreme values, -.98, .47, and .50, were from the same population could be rejected at the .05 level of significance. On this basis, these correlations were dropped from the sample, and subsequent analyses were based on an N of 274. The five-point summary for the sample of 274 is also displayed in Figure 1.

Two types of independent variables. Following preliminary inspection of the correlation coefficients, the relations of correlation size to each of the independent variables were considered. The independent variables were considered in two categories. Some independent variables, e.g. age, sex, or the subject area in which achievement was measured, varied among different correlations coded for the same study. Thus, a single study might report findings for eleven-year-olds and fifteen-year-olds, for males and females, or for reading and mathematics achievement. Independent variables of this type are referred to as correlation-level variables. The N's, means, and standard deviations of correlations were calculated for each value of all correlation level variables. Other independent variables, e.g. year of the study, geographic region, or method of collecting viewing information,

varied from study to study but took on only a single value for all correlations coded for a single study.¹ Independent variables of this type are referred to as study-level variables. In order to examine independent variables in this second category, an additional data set was created with only one observation for each study. This second data set included all study level variables, together with the average televiewing-achievement correlation for each study. Using this data set, N's, means and standard deviations of the average correlations were calculated for all study-level variables. For example, one value of the study-level variable "geographic region" was "midwest". There were five studies in the midwest, so the mean and standard deviation of the average correlations for these five studies were tabulated.

The correlation-level tabulations revealed that some of the coded characteristics were present for six or fewer of the 274 correlations, and on this basis these characteristics were dropped from further consideration. All of the independent variables dropped pertained to specific types of statistical controls for prior achievement or for IQ.

Analyses of variance. The relationship of each independent variable to the size of the correlations was tested for significance using analysis of variance (anova). Because the average size of the correlations differed greatly from study to study ($F(22,251) = 4.98, p < .001$), study was used as a blocking variable in the anovas for correlation-level variables. That is, the main effect of study was removed before examining the main effect for the independent variable being analyzed. This procedure helped to minimize the problem of confounding between study and other variables, and the problem of lack of statistical independence among correlations coded for the same study.

For the study-level variables, ordinary one-way anovas were performed with study as the unit of analysis. One final series of anovas were performed, to examine the relationship between amount of viewing and correlation size under various conditions. For each correlation-level variable where the one-way anova was significant, a two-way anova was performed, the factors being that variable and hours of televiewing. Study was again used as a blocking variable.

Graphing the viewing-achievement relationship. When the correlations were grouped into categories according to weekly hours of viewing, analysis of variance revealed statistically significant differences among the mean correlations at different levels. This suggested that the relation between viewing and achievement was in fact non-linear. For example, the mean correlation for samples viewing less than ten hours per week was .07, suggesting that achievement improved as televiewing increased from zero up to ten hours. For samples where the mean viewing time was between 30 and 35 hours per week, the mean correlation was -.09, suggesting that in that range, increased viewing had a deleterious effect upon achievement. To determine more precisely the form of the achievement-viewing relationship, a polynomial regression was used to fit correlation size as a function of weekly hours of viewing. Linear and quadratic terms were both significant; higher-order terms were not. The coefficient of determination from this regression was .11. The regression function was interpreted as describing the slope of the viewing-achievement relationship as a function of amount of viewing. Using this expression for the slope, it was possible (using calculus) to obtain an estimate of the viewing-achievement relationship itself. However, while the shape of the viewing-achievement relationship could be determined, the size of the effect was not shown by this

analysis. The strength of the relationship between televiewing and achievement may be inferred, however, from the original tabulations of televiewing-achievement correlations for different viewing levels described earlier. Identical analyses were also performed for the smaller samples of correlations for males only and for females only, on the basis of a significant sex by viewing interaction found in the two-way anova for sex.

Results

The stem-and-leaf diagram of all coded correlations revealed that the median televiewing-achievement correlation was $-.06$, with fifty percent of the correlations falling between $-.13$ and $+.02$. Of a total of 277 correlations, 95 were zero or positive, and 182 were negative. The stem-and-leaf shows that overall, televiewing appears to have a slight, negative effect on school achievement.

The results reported below elaborate upon this finding in two ways. First, analyses of study characteristics produced no evidence that findings differed for studies done in different times or places, or that televiewing-achievement correlations varied according to methodological characteristics of the studies. Second, analyses of sample characteristics did reveal statistically significant differences in televiewing effects on achievement for males versus females and for high versus middle or low IQ students. Evidence was also found that the effect of televiewing on achievement is not linear, and that small amounts of viewing may in fact be related to increased achievement but excessive viewing is detrimental.

Examinations of both kinds of questions, concerning study characteristics and sample characteristics, began with tabulations of numbers, means, and

standard deviations of correlations. These were followed by analyses of variance for each characteristic. Descriptive statistics, F-ratios and significance levels from all of these analyses are reported in Table 3.

Insert Table 3 about here

Analyses of Study Characteristics

The first results reported in Table 3 concern the locations of the various studies. No significant difference was found in the average televiewing-achievement correlations for studies in different regions of the United States or in Canada, England, or Japan. An additional analysis, not reported in Table 3, concerned the years in which various studies were done. To determine whether the mean televiewing-achievement correlations differed for earlier versus more recent studies, mean correlations for studies were regressed on the year the studies were reported. No significant relationship was found between year of study and televiewing-achievement correlation size. In conclusion, the televiewing-achievement relationship was not found to vary according to either the time or the place the study was performed.

Various statistical characteristics of studies were also examined. These included the designation of the study as a quasi-experiment or survey; sample size; whether there was random sampling from a well-defined population; the type of reported statistic from which correlation estimates were derived; whether linearity of the televiewing-achievement relationship was assumed in the study; and whether significance tests were reported. Of these six indicators of the size, type, and quality of the different studies, none was found to be related to the size of televiewing-achieving correlations.

The last three study-level variables reported in Table 3 pertained to the collection of achievement and televiewing information. These were the type of information used to indicate achievement (raw achievement test score, derived score, teacher rating, etc.); the person(s) providing viewing information (parent and/or child); and the method of collecting viewing information (questionnaire, interview, program checklist, or a combination of methods). None of these variables yielded statistically significant F-ratios.

An objection sometimes raised to quantitative research integrations is that the quality of the primary studies synthesized is not taken into account. Critics argue that the results of one well-designed study are more credible than those of many studies poorly executed. The examination of study characteristics in this synthesis, however, yielded no evidence that methodological characteristics of studies were related to their reported outcomes. Thus, the inclusion of all the available studies in the substantive analyses appears justified.

Analyses of Sample Characteristics

The study characteristics discussed in the last section were each examined treating study as the unit of analysis. That is, each study was treated as a single data point, and the average of all televiewing-achievement correlations coded for a given study was the dependent variable. The sample characteristics discussed below were examined treating each of the 274 individual televiewing-achievement correlations as a data point, and using study as a blocking variable. (This distinction was discussed in the section on data analysis.) The first of the sample characteristics, achievement subject area, refers to the dependent measure employed. The other sample characteristics, age,

grade level, sex, IQ, and mean viewing time per week, all refer to the students in the original studies.

As shown in Table 3, no significant differences were detected in the relationship of televiewing to achievement in different content areas, and no significant differences were found for children at different age or grade levels. Significant F-ratios were obtained, however, for sex, IQ, and mean viewing time per week.

In examining the effect for sex, correlations for mixed-sex samples were not used. The remaining correlations represented 7 of the 23 studies. The mean televiewing-achievement correlation for males was $-.04$, and for females was $-.13$, indicating a significantly greater impact of televiewing upon achievement for girls than for boys ($F(1,62) = 6.70, p < .05$).

In examining the effect for IQ, correlations for samples where IQ was unrestricted were pooled with those for medium-IQ samples. Thus, the three levels were high, medium/unrestricted, and low. Mean televiewing-achievement correlations for low and medium/unrestricted IQ levels were approximately $-.05$, but for the high IQ levels, the mean was $-.14$, indicating a significantly greater impact of televiewing upon achievement for higher IQ ranges ($F(2,249) = 3.50, p < .05$).

A significant effect for mean viewing time per week was also found. This indicated that the impact of televiewing upon achievement depends upon the amount of television viewed ($F(6,245) = 6.26, p < .001$). From Table 3, it appeared that up to ten hours per week, viewing more television had a positive influence upon achievement, but beyond ten hours per week, increased viewing had a negative impact.

In summary, analyses of sample characteristics taken one at a time revealed significant main effects for sex, IQ, and viewing. Subsequent analyses were to probe possible interactions among these factors. In particular, sex by viewing and IQ by viewing interactions were examined in two-way analyses of variance, again blocking on study.²

The 70 televiewing-achievement correlations for single-sex samples included none for which viewing averaged less than 15 hours per week. Thus, only five of the seven viewing levels were included in the sex by viewing anova. This analysis showed, in addition to significant main effects for sex and viewing, a significant interaction between these two variables ($F(4,54) = 9.61, p < .001$). The interaction indicates that the shape of the curve relating televiewing and achievement differs for males and females.

The problem of empty cells in the IQ by viewing anova could not be solved by simply dropping some viewing levels, as was done in the sex by viewing analysis. All 7 viewing levels were represented for the medium/unrestricted IQ range, but many viewing levels were missing for the low and high IQ ranges. (As a result, only four degrees of freedom were available for testing the IQ by viewing interaction.) The IQ by viewing interaction was significant ($F(4,239) = 3.78, p < .01$), as were the main effects for both viewing and IQ. This significant interaction indicates that the form of the viewing-achievement relationship differs for different levels of IQ.

Form of the Televiewing-Achievement Relationship

As was described in the section on data analysis, the form of the relationship between televiewing and achievement could be estimated from the mean correlations at different viewing levels. Results of this estimation are displayed in Figure 2. This figure shows how achievement on a hypothetical

Insert Figure 2 about here

composite achievement test varies as a function of weekly hours of televiewing. While it is not possible to determine the mean or standard deviation of this hypothetical test, it is clear that achievement increases with televiewing up to 10 hours per week, then decreases steadily, leveling off at 35 to 40 hours per week. Given that the overall average televiewing-achievement correlation is only $-.05$, it appears that the actual size of the effect is small.

The same analysis was run for the smaller set of correlations on male samples and on female samples, to clarify the sex by viewing interaction reported above. Because viewing times for all of these samples were 15 or more hours per week, the forms of the separate relationships below this viewing level could not be determined. It appeared, however, that increased viewing beyond 15 hours per week up to about 30 hours was more deleterious for females than for males; beyond 30 hours per week, the effects of additional viewing were small, and comparable for the two sexes. No further analysis was made of the viewing by IQ interaction, due to insufficient data.

Discussion

This synthesis of 23 research studies indicated that there is a slight negative relationship between television viewing and achievement. The effect was found in large, national surveys and statewide assessments as well as small studies in single schools, in different regions of the United States and abroad, in studies spanning a period of 26 years, using a variety of achievement measures and research methodologies. Televiewing does influence achievement, but its effect is small, and it appears unlikely that television alone is responsible for national declines in achievement. Televiewing accounts for little

variance in achievement; it is neither the "villain" nor the "redeemer" some have claimed.

The research synthesis also showed that the influence of television on achievement depends upon amount of viewing time. Up to 10 hours per week of viewing may actually enhance achievement slightly; beyond ten hours, achievement diminishes with increased viewing up to 35 or 40 hours per week; and beyond that level additional viewing apparently has little further impact. This pattern may reflect differences in the selectiveness of light versus heavy viewers. It is easy to imagine that in homes where children view less than ten hours of television per week, parents exercise substantially more control over what is watched than in homes where children view several hours of television daily. Another hypothesis would be that it is only beyond ten hours per week that tele-viewing begins to interfere significantly with homework, reading, or other more intelligently stimulating activities. In as much as the average weekly viewing of 6- to 11- year-olds is 25 hours and 41 minutes (Ratner, et al., 1978, page 51), the negative impact of televiewing beyond 10 hours per week is clearly of concern.

It was also found that the negative relationship between televiewing and achievement is much stronger for girls than for boys, and for children of high intelligence than for those of average or below average intelligence. The reasons for the televiewing-achievement relationship are not well understood; one can only speculate as to the origins of these sex- and ability-related differences. They may reflect differences in the kinds of activities displaced by television viewing or in the kinds of programs viewed (cartoons may have a different impact than documentaries, for example), or they may reflect the influence of other, unknown variables, correlated with television viewing and causally linked to academic achievement. In the latter case, television viewing may have no direct, causal

influence upon achievement at all.

It is clear that more research on television and achievement is called for. The studies included in this synthesis were primarily cross-sectional and cannot clearly establish any causal influences. It is also notable that while significant differences were found in effects for males versus females and for different levels of intelligence, only one study conducted by Morgan and Gross (1980), controlled simultaneously for these two factors. Future studies should be planned to detect differences between sexes and among ability levels, to model possibly curvilinear relationships, and to elucidate possible causal mechanisms through the use of longitudinal designs.

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Footnotes

¹Three independent variables took on only a single value for all correlations coded for a single study with the exception of just one study. Lyle and Hoffman (1972) employed different methods of collecting viewing and achievement data for first graders than for sixth or tenth grade students, so that codes for the type of information collected on the dependent measure, method of determining viewing, and person providing viewing information all varied within that study only. For this reason, the Lyle and Hoffamn study was treated as two separate studies in all study-level analyses, one at the first grade level and the other at grade levels 6 and 10. The study-level data set therefore included 24, not 23 observations.

²There were insufficient data to examine the sex by IQ interaction because only a single study (Morgan & Gross, 1980) controlled simultaneously for both sex and IQ.

Table 1

Description of Studies Included
in the Research Synthesis

Author: Anderson and MacGuire

Year: 1978

Sample Size and Description: The study employed 102 subjects in grades three and four and 198 subjects in grades five and six from a metropolitan city in Western Canada.

Dependent Measure: Results were reported on reading, vocabulary and mathematics subtests of a locally constructed achievement test.

Substantive Results: The number of TV programs viewed appeared to have only a marginal negative relationship with achievement, the strongest being with vocabulary.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity not assumed.

Determination of Viewing Time and Method of Collecting Data:

The extent of TV viewing was determined by the frequency with which TV programs were watched. Students responded to a survey which listed programs broadcast in the area, by marking the programs viewed each week.

Author: Childers and Ross

Year: 1973

Sample Size and Description: The study employed 100 middle elementary pupils.

Dependent Measure: Results were reported on grade point average calculated across all subject areas.

Substantive Results: The relationship between television viewing hours, IQ and achievement scores with grade point average showed that there was no significant relationship between the amount of hours a child spends watching television and his grades in school.

Control Variables: IQ and prior achievement were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

Questionnaires were filled out by the student indicating how many hours of television were viewed on an average week night.

Table 1 (cont.)

Author: Furu

Year: 1971

Sample Size and Description: This study employed a random sample of 1,303 fourth, seventh, and tenth grade students in Tokyo, Japan.

Dependent Measure: Grade point averages were calculated across all subject areas.

Substantive Results: The school achievement score of the high TV group was lower than that of the low TV group for every grade (4th, 7th, 10th). The effects of the interaction of intelligence and TV was not significant for any grade. A significant effect from heavy viewing was found only in the low intelligence seventh grade group and in the high intelligence tenth grade group.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

In the fourth and seventh grade, students filled in time-scale sheets to show the amount of TV viewing from Thursday through Sunday. A weighted mean score for each day was used as the measure of viewing time. In the tenth grade, the viewing time for week-ends was ascertained by direct questions. An estimated total for weekdays, Saturdays and Sundays was used as the measure.

Author: Gadberry

Year: 1977

Sample Size and Description: This longitudinal study employed 90 subjects from three age groups (6 to 7, 8 to 9 and 10 to 11) from suburban Long Island public schools.

Dependent Measure: Student performance was measured at two time points in this cross-lagged panel design. The dependent measure was grade point average calculated across all subject areas.

Substantive Results: Viewing amount affects school grades in a negative direction for all ages, both sexes and high and low achievers. Results indicate a small but non-significant negative relationship.

Control Variables: Sex and prior-achievement were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

Both diary method and an aided recall method were used at different points in the study. These yielded information on programs viewed, which was used to determine total viewing time.

Table 1 (cont.)

Author: Greenstein

Year: 1954

Sample Size and Description: This study involved 67 fifth grade students followed over six semesters. Students were divided into two groups--those who had access to television (experimental) and those who did not (control). Assignment to the TV and non-TV groups did vary if a student gained access during the course of the study. The study was conducted in a Chicago elementary school in a lower-middle income community.

Dependent Measure: Grade point average calculated across all subject areas was the dependent variable.

Substantive Results: Grades of the TV group were consistently higher than the non-TV group in reading, for up to six hours of daily viewing. For more than six hours the differences were negligible. Oral composition grades of the TV group were significantly better than the non-TV group. There were no significant differences in grades in written composition. The means were consistently higher for the TV group in all subject areas except penmanship.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity not assumed.

Determination of Viewing Time and Method of Collecting Data:

Questionnaires were completed by the child. Students estimated their viewing time for each week day. Interviews were conducted to determine the validity of the students' estimates.

Author: Heideman

Year: 1957

Sample Size and Description: This study employed a simple random sample of 8th grade pupils from the five junior high schools in St. Paul, Minnesota. The total sample included 199 individuals.

Dependent Measure: Grade equivalent scores on vocabulary and reading comprehension subtests from a standardized reading achievement test were the dependent measures.

Substantive Results: There were no significant differences between the high televiewing and low televiewing groups for either sex on any reading score when IQ and/or socioeconomic status were not controlled. For boys, when IQ was controlled there were significant differences between the means of the low televiewers and high televiewers on overall reading ability, but not for vocabulary and reading comprehension. For girls, there were no significant differences between the means of the high and low viewers on any reading variable when IQ was controlled.

Table 1 (cont.)

Control Variables: Sex and IQ were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

Average viewing time was computed from daily minutes of television recorded across three inventories. These inventories listed all of the programs telecast over the four local stations and were completed by students for each of three weeks.

Author: Himmelweit, Oppenheim and Vince

Year: 1953

Sample Size and Description: The main study involved 1,845 matched pairs of viewers and non-viewers in primary and secondary modern schools in England, subjects were matched on the basis of sex, age, intelligence, and social class.

Dependent Measure: Teachers compared the performance of viewers and non-viewers in their classes on reading in class, written English, Arithmetic, and General Science.

Substantive Results: Results suggested that overall the school performance of viewers was equal to or slightly lower than that of their matched controls. Altogether, 47% of the controls were rated as performing better than viewers matched with them, and 36% of the viewers were doing better than the controls. Overall, there was a trend, although not statistically significant, indicating better academic performance on the part of the controls, viewers school attainment was sometimes a little poorer, but there were no sharp differences in the patterns of performance from one subject area to another.

Control Variables: IQ was used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

Children were asked to keep a diary for one day a week. They recorded everything they did between school and bedtime. Estimate of total viewing time was determined from entries in the diary.

Table 1 (cont.)

Author: Kohr

Year: 1979

Sample Size and Description: The study involved a random sample of 10,037 students from three grade levels- 5, 8 and 11. Students came from 113 school districts, broadly representative of the state of Pennsylvania. There were 453 elementary schools, 151 middle or junior high schools and 128 senior high schools. The paper reports on secondary analyses of data collected in the Pennsylvania Educational Quality Assessment Program.

Dependent Measure: Scores on reading and mathematics subtests from a standardized achievement test.

Substantive Results: Student-level analyses yielded little evidence of linear or non-linear relationships between viewing and cognitive or non-cognitive outcomes except that there was a substantial drop in achievement when students indulged in 5 or more hours of television viewing per school night. School-level analyses showed strong negative relationships between television viewing and cognitive achievement, particularly at ages 8 and 11.

Control Variables: Sex was used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity not assumed.

Determination of Viewing Time and Method of Collecting Data:

Students responded to a questionnaire. Estimates of the amount of television viewing from the time students got home from school until going to bed, were indicated by marking one of the appropriate response categories: 1) about one hour or less, 2) about two hours, 3) about three hours, 4) about four hours and 5) about five hours or more.

Table 1 (cont.)

Author: La Blonde

Year: 1966

Sample Size and Description: This study employed a random sample of fifth grade children registered in the public schools of St. Paul, Minnesota from high, average and low income areas.

Dependent Measures: The dependent measures were scores on reading, mathematics, language arts and study skills subtests and overall achievement from a standardized achievement test.

Substantive Results: Measured achievement and televiewing bear an inverse relationship to each other. Comparisons indicate a negative and significant relationship when girls were considered separately. When boys were considered separately there was a negative and non-significant relationship in all areas except reading where results indicated a negative and significant relationship.

Control Variables: Sex was used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

Data was obtained by means of a Television Viewing Log which contained a listing of all the television shows scheduled for the area that week. Students underlined the programs they watched. An estimate of viewing time was calculated for each child.

Author: Lyle and Hoffman

Year: 1972

Sample Size and Description: This study involved a random sample of first, sixth and tenth grade students from a racially mixed school district in California. The total sample included 1,694 students.

Dependent Measure: Results for first grade students were reported as teacher ratings of overall achievement. Intelligence test scores were reported for sixth and tenth grade students.

Substantive Results: In the first and sixth grades, little difference in amount of televiewing was indicated among ability groups. In the tenth grade, however, there was some evidence that brighter students watched less TV.

Control Variables: Sex was used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

For first graders, personal interviews were conducted. For sixth and tenth grade students a program log listing all programs broadcast in the area, was employed. Students marked the programs they had watched.

Table 1 (cont.)

Author: Mayeske et.al.

Year: 1969

Sample Size and Description: The study employed a random sample of 33,233 students from throughout the United States in grades six, nine and twelve.

Dependent Measure: Average composite achievement scores (across all subject areas) from a standardized achievement test were the dependent measure.

Substantive Results: A curvilinear relationship was found between TV viewing and the achievement composite. The nature of this relationship altered at the different grade levels. The trend was for achievement levels of students who said they watched television not at all, very little, or very much to be lower than the achievement levels of the students who said they watched TV an intermediate number of hours.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity not assumed.

Determination of Viewing Time and Method of Collecting Data: Students responded to a questionnaire by indicating the approximate number of hours spent each day viewing television.

Author: Morgan and Gross

Year: 1980

Sample Size and Description: This random sample was composed of 602 students in the sixth through ninth grades attending a public school in suburban/rural New Jersey.

Dependent Measure: The dependent measures were scores on reading, mathematics, and language subtests from a standardized achievement test.

Substantive Results: This analysis consistently revealed significant negative correlations between amount of viewing and achievement in reading, mathematics and language. The magnitude of these correlations remained the same when controlled for social class, sex, grade in school, but were reduced when IQ was held constant. Language usage and structure and reading comprehension remained negative and significant when controlled for IQ. Simple correlations of viewing with mathematics scores dropped to almost zero when IQ was held constant.

Control Variables: Sex, IQ were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity not assumed.

Determination of Viewing Time and Method of Collecting Data: Television viewing data was collected by means of a questionnaire. Students responded to the question, "Altogether, about how many hours a day do you spend watching television-including morning, afternoon and evening?".

Table 1 (cont.)

Author: Nelson

Year: 1963

Sample Size and Description: The sample involved two hundred superior high school students; 100 who graduated in 1962 (trial group) and 100 who graduated in 1963 (cross-validation group). They were representatives of 41 high schools located in the state of Wisconsin.

Dependent Measure: The dependent measure was grade point average calculated across all subject areas.

Substantive Results: There was little relationship between amount of regular televiewing and high school grade point averages among superior Wisconsin high school students.

Control Variables: IQ and prior achievement were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity not assumed.

Determination of Viewing Time and Method of Collecting Data:

A questionnaire and a program checklist were distributed. The total amount of time each student viewed programs regularly was determined from summing the time assigned to those programs watched on a regular basis. The amount of time each student indicated he had viewed the previous day was compared with the amount of time allotted to programs viewed by him on that day. Yearly interviews with students and their parents were used to verify responses.

Author: Perney

Year: 1976

Sample Size and Description: The sample consisted of 202 kindergarten children from two suburban school districts north of Chicago. The two school districts contained a cross-section of several different racial/ethnic backgrounds.

Dependent Measure: The dependent measures were scores on quantitative and verbal ability subtests from two standardized achievement tests.

Substantive Results: Total amount of television viewed correlated negatively with quantitative scores, but correlated positively with verbal scores for both girls and boys. Both effects were significant for girls and non-significant for boys.

Control Variables: Sex was used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

A parent questionnaire was constructed to collect information concerning the television viewing habits of the child and their family (types and amount of shows watched, and conditions under which viewing was done).

Author: Rhode Island State-wide Assessment Year: 1976
17 year olds.

Sample Size and Description: The study involved 3702, 17 year olds randomly sampled from Rhode Island High Schools. The sample was proportionately representative of the community size, sex and racial distributions of the state. Non public and public schools were sampled.

Dependent Measure: The dependent measure was total test score on a criterion-referenced achievement test.

Substantive Results: There was a $-.15$ correlation between number of hours spent watching television and total test scores. The correlation was significant at the $.001$ level.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data: A questionnaire was administered to students requesting the amount of viewing time for each day.

Author: Rhode Island Statewide Assessment Year: 1976
4th-8th grades

Sample Size and Description: The study involved approximately 2,785 4th grade and 3,985 8th grade students randomly sampled from Rhode Island elementary and junior high schools. The sample was proportionately representative of the community size, sex and racial distributions of the state. Non-public and public schools were sampled.

Dependent Measure: Standardized achievement test scores on vocabulary, reading comprehension, spelling, combined language skills, study skills and combined mathematics skills were the dependent variables.

Substantive Results: For fourth graders, watching 2 to 3 hours of TV a day had the strongest effect. This effect was positive. Students in the fourth grade who watched 2-3 hours achieved significantly more than other fourth graders. By contrast, eighth graders who watched more than 4 hours a day showed the strongest effect on achievement. This effect was negative, they achieved less. The authors conclude that in general, TV watching did not have a strong effect on achievement.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:
Students responded to questionnaires by indicating the amount of time spent watching television each day.

Table 1 (cont.)

Author: Schramm, Lyle and Parker

Year: 1961

Sample Size and Description: The study involved 256 first grade students from two Canadian communities - Radiotown and Teletown (the latter had TV, the former did not). The towns were similar in most other respects.

Dependent Measure: Scores from the vocabulary subtests of the Stanford-Binet Intelligence test were used.

Substantive Results: When Radiotown and Teletown are compared on a general vocabulary test, viewers in both high and average intelligence groups scored significantly higher than corresponding groups of non-viewers. There was no difference between viewers and non-viewers in the below average intelligence group.

Control Variables: IQ was used in the tabulations for the research syntheses.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:
Questionnaires were sent to the parents to determine viewing time.

Author: Scott

Year: 1956

Sample Size and Description: The sample consisted of 407 students within four randomly selected elementary schools. The study was confined to fifteen sixth and seventh grade classes.

Dependent Measure: Scores on reading mathematics, language and spelling subtests from a standardized achievement test were used.

Substantive Results: Those children who viewed more television achieved less proficiency, as measured by standardized tests, in mathematics and reading and are significantly inferior in total achievement to those children who viewed less.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:
A program checklist was distributed for two one-week periods. On each school day children checked those programs that were actually viewed since the prior day at school.

Table 1 (cont.)

Author: Slater

Year: 1963

Sample Size and Description: This study employed a simple random sample of 150 students from Erie County, New York. The sample was proportionately representative of the school population of the entire county, namely city school students, village school students and town school students.

Dependent Measure: Ranked standardized achievement scores on reading, spelling mathematics and total school achievement were the dependent measures.

Substantive Results: There was a negative relationship between TV watching and achievement for every variable. Reading was significant at the .05 level. Spelling and mathematics were non-significant at the .05 level.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

Average viewing time was computed from a TV inventory which listed all the TV programs available for those hours when children were not in school. During a two week period the TV inventory was sent home each night to be marked by the students and their parents.

Author: Sustaining Effects Study

Year: 1977

Sample Size and Description: A nationally representative cluster sample of roughly 15,000 pupils in grades 1-6 were tested. Parents were interviewed in the home to obtain income, TV viewing, and other background information.

Dependent Measure: Scores on a standardized achievement test were used. Students at each grade level took tests of vocabulary, reading comprehension, mathematics concepts, and mathematics computation.

Substantive Results: Significant differences in viewing among racial groups were found with blacks watching more hours of TV than non-blacks. A curvilinear relationship between viewing and achievement emerged, especially in grades 4-6, with maximum achievement associated with moderate viewing. At the lower grade levels, very slight positive relationships were found.

Control Variables: No other factors were controlled in the tabulations used for the research synthesis.

Test for Curvilinearity: Separate means were reported for each range of reported daily viewing- curvilinearity was not tested formally, but was not assumed either.

Determination of Viewing Time and Method of Collecting Data:

Home-based parent interview-structured questionnaire items on amount of viewing time on weekdays.

Table 1 (cont.)

Author: Tan and Gunther

Year: 1979

Sample Size and Description: The study employed 74 Mexican-American members of a predominantly Mexican-American high school in a large, industrial southern city.

Dependent Measure: Grade point average calculated across all subject areas was the dependent measure.

Substantive Results: There was no relationship between total use of English-language mass media and academic performance. However, there was a significant negative relationship between grade point average and TV use for entertainment.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data: Questionnaires were distributed to students, who responded to the item "How much time do you now spend daily, watching television?" (hours). Average hours of daily viewing were computed from the responses.

Author: Texas Statewide Assessment

Year: 1977

Sample Size and Description: This study involved a random sample of approximately 10,400 sixth grade students. The sampling plan was designed to provide a proportionate representation of ethnic groups, and a cross-section of different types of school districts.

Dependent Measure: Scores on reading and mathematics subtests of a standardized achievement test were used.

Substantive Results: There was a relationship found between amount of viewing time and performance on achievement tests. Students who reported watching up to two hours of TV a day scored at the national average or above on all tests. Those who reported watching more than four hours of TV scored below national norms. Those who watched more than five hours attained lowest scores on all tests.

Control Variables: No control variables were used in the tabulations for the research synthesis.

Table 1 (cont.)

Test for Curvilinearity: Linearity not assumed.

Determination of Viewing Time and Method of Collecting Data:

Students responded to an item on a questionnaire by marking the approximate numbers of hours of television viewed the previous night- none, one hour or less, 1 to 2 hours, 2 to 3 hours, 3 to 4 hours, 4 to 5 hours, 5 to 6 hours, six hours or more.

Author: Thompson

Year: 1964

Sample Size and Description: The sample was composed of 100 third grade children selected from the schools of a central Pennsylvania community. These children were typical of the average third grade class in variables such as age, IQ and average achievement. The average status level of the group was lower middle class with an over-proportion in the professional and technical group and an under-proportion in the operative and kindred workers group.

Dependent Measure: The dependent measure was total school achievement as assessed by total achievement test scores.

Substantive Results: There was a significant negative correlation between hours of viewing and total achievement. When mental age was held constant, the correlation with total achievement dropped to an insignificant level.

Control Variables: Mental Age was used in the tabulations for the research synthesis.

Test for Curvilinearity: Linearity assumed.

Determination of Viewing Time and Method of Collecting Data:

Viewing time was assessed by individual interview with the child.

Table 2

Mean and Standard Deviation of Correlations, and Number of
Correlations coded, for each Study in the Synthesis

<u>Study</u>	X	S	N
Anderson and MacGuire (1978)	-.09	.09	12
Childers and Ross (1973)	-.08	.00	1
Furu (1971)	-.16	.05	3
Gadberry (1977)	-.17	.07	7
Greenstein (1954)	-.26	.00	1
Heideman (1957)	.05	.23	8
Himmelweit, Oppenheim and Vince (1958)	-.15	.21	16
Kohr (1979)	-.11	.04	8
LaBlonde (1966)	-.28	.19	10
Lyle and Hoffman (1972)	-.02	.08	6
Mayeske (1969)	.00	.12	24
Morgan and Gross (1980)	-.08	.12	36
Nelson (1963)	-.22	.00	1
Perney (1976)	.00	.19	4
RI 17 (1976)	-.15	.00	1
RI 4-8 (1976)	-.01	.12	40
Schramm, Lyle and Parker (1961)	.18	.20	5
Scott (1956)	-.14	.06	4
S.E. Study (1977)	-.02	.07	72
Slater (1963)	-.16	.07	4
Tan and Gunther (1979)	.10	.00	1
Texas Assessment (1977)	-.08	.11	8
Thompson (1964)	-.15	.19	2

Table 3

Means and Standard Deviations of Correlations, Numbers of
Correlations, and F-tests for All Independent Variables

Location of the Study					
	X	S	N	F(df ₁ df ₂)	P
<u>Geography</u>					
Northeastern	-.08	.10	2	1.83 (9,14)	.3753
Eastern	-.13	.04	5		
Midwest	-.14	.16	1		
South	.10	.00	1		
West	-.07	.06	4		
Canada	.05	.19	2		
Japan	-.16	.00	1		
Entire U.S.	-.01	.01	2		
Not specified	-.08	.00	1		
England	-.15	.00	1		
Methodological Characteristics					
<u>Research Design</u>					
Quasi-experiments	-.10	.19	4	.09 (1,22)	.7619
Surveys	-.08	.09	20		
<u>Sample Size</u>					
1 (Low through 100)	-.11	.14	5	.228 (3,20)	.8756
2 (101 through 500)	-.08	.14	9		
3 (501 through 2000)	-.10	.06	4		
4 (200 through high) over 2000	-.06	.06	6		
<u>Random Sampling</u>					
Yes	-.09	.09	14	.088 (1,22)	.7690
No	-.08	.14	10		

Table 3

Study Characteristics (cont.)

	X	S	N	F(df ₁ ,df ₂)	P
<u>Statistic Reported</u>					
Means and Standard Deviations	-.09	.10	6	.581 (7,15)	.7613
Simple Correlations	-.10	.12	7		
Partial Correlations	-.08	.00	1		
F ratios	-.02	.10	2		
T tests	.02	.22	2		
Chi-square or Contingency Coefficient	-.22	.00	1		
Frequencies or Crosstabs	-.07	.08	3		
Normalized S	-.16	.01	1		
<u>Linearity Assumed</u>					
No	-.10	.09	9	.152 (1,22)	.7001
Yes	-.08	.12	15		
<u>Use of Significance Tests</u>					
Yes	-.09	.12	21	.002 (1,22)	.9692
No	-.08	.06	3		
<u>Dependent Measure:</u>					
<u>Type of information collected</u>					
Raw achievement scores	-.12	.03	3	.883 (8,15)	.5524
Standardized achievement scores	-.04	.05	5		
GPA	-.13	.13	6		
IQ scores	.08	.15	2		
Grade equivalent	-.08	.18	3		
Percentiles	-.08	.00	1		
Teacher rating	-.08	.10	2		
Not specified	-.16	.00	1		
Ranked achievement scores	-.16	.00	1		

Table 3

Method of Obtaining Viewing Information

	X	S	N	F(df ₁ ,df ₂)	P
<u>Person Responding</u>					
Child	-.11	.10	19	3.138 (2,21)	.0642
Parent	-.05	.11	3		
Both	-.09	.10	2		

Method of Collecting Data

Questionnaire by Child	-.09	.10	12	1.432 (5,18)	.2636
Questionnaire by Parent	.09	.13	2		
Interview with Child	-.16	.00	1		
Interview with Parent	-.02	.00	1		
Program checklist	-.12	.12	5		
Combination of Methods	-.11	.09	3		

Achievement Measure

Subject Area

Reading	-.06	.16	66	.46 (8,243)	.8843
Language Arts	-.12	.16	21		
Vocabulary	-.01	.14	51		
Spelling	-.06	.08	8		
Mathematics	-.05	.11	60		
Science	-.21	.04	2		
General Intelligence	-.03	.05	4		
Total School Achievement	-.08	.14	52		
Study Skills	-.06	.18	10		

Table 3

Population Characteristics

	X	S	N	F(df ₁ ,df ₂)	P
<u>Age</u>					
5	-.00	.19	4	0.75 (11,240)	0.6919
6	.04	.16	20		
7	-.03	.07	12		
8	-.07	.09	33		
9	-.01	.13	36		
10	-.15	.19	42		
11	-.04	.11	28		
12	-.14	.05	5		
13	-.06	.14	66		
14	-.04	.13	13		
15	-.08	.05	3		
16	-.08	.06	3		
17	-.06	.11	9		
<u>Grade Level</u>					
Primary	-.02	.13	65	1.69 (3,248)	.1688
Elementary	-.07	.16	110		
Junior High	-.06	.13	71		
High School	.05	.11	28		
<u>Sex</u>					
Male	-.04	.15	35	6.70 (1,62)	.0120
Female	-.13	.18	35		
<u>IQ</u>					
High	-.14	.21	22	3.50 (2,249)	.0317
Medium/unrestricted	-.05	.13	233		
Low	-.04	.13	19		

Table 3

Population Characteristics (cont.)

	X	S	N	F(df ₁ ,df ₂)	P
<u>Mean Viewing Time Per Week</u>					
1 (0 through 10)	.07	.09	45	6.26 (6,245)	.0001
2 (10.1 through 15)	-.11	.21	23		
3 (15.1 through 20)	-.09	.14	72		
4 (20.1 through 25)	-.05	.12	59		
5 (25.1 through 30)	-.10	.10	36		
6 (30.1 through 35)	-.09	.09	24		
7 (over 35)	-.03	.14	15		

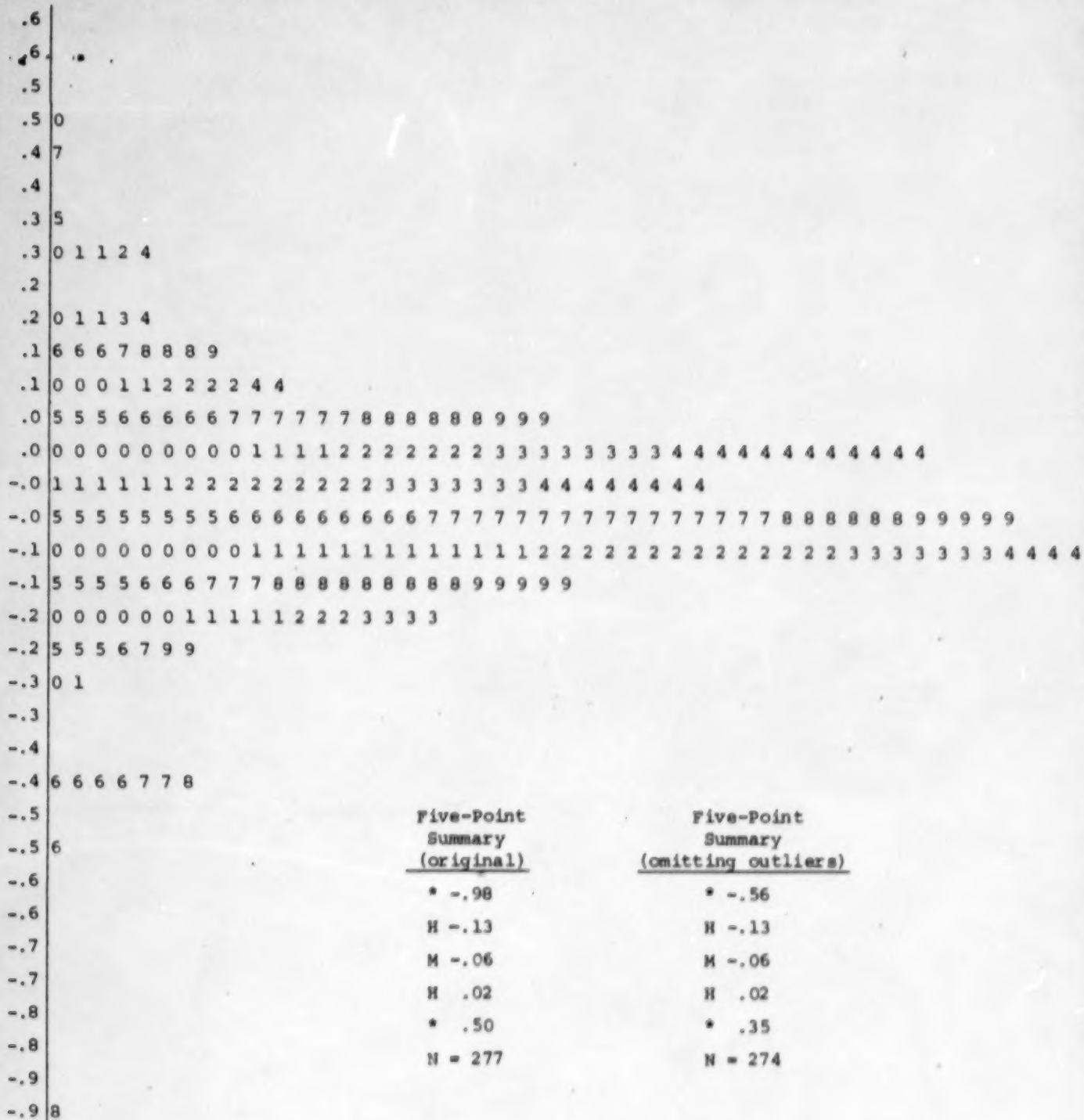


Figure 1. Stem and leaf and five-point summary of correlations between achievement and amount of television viewing.

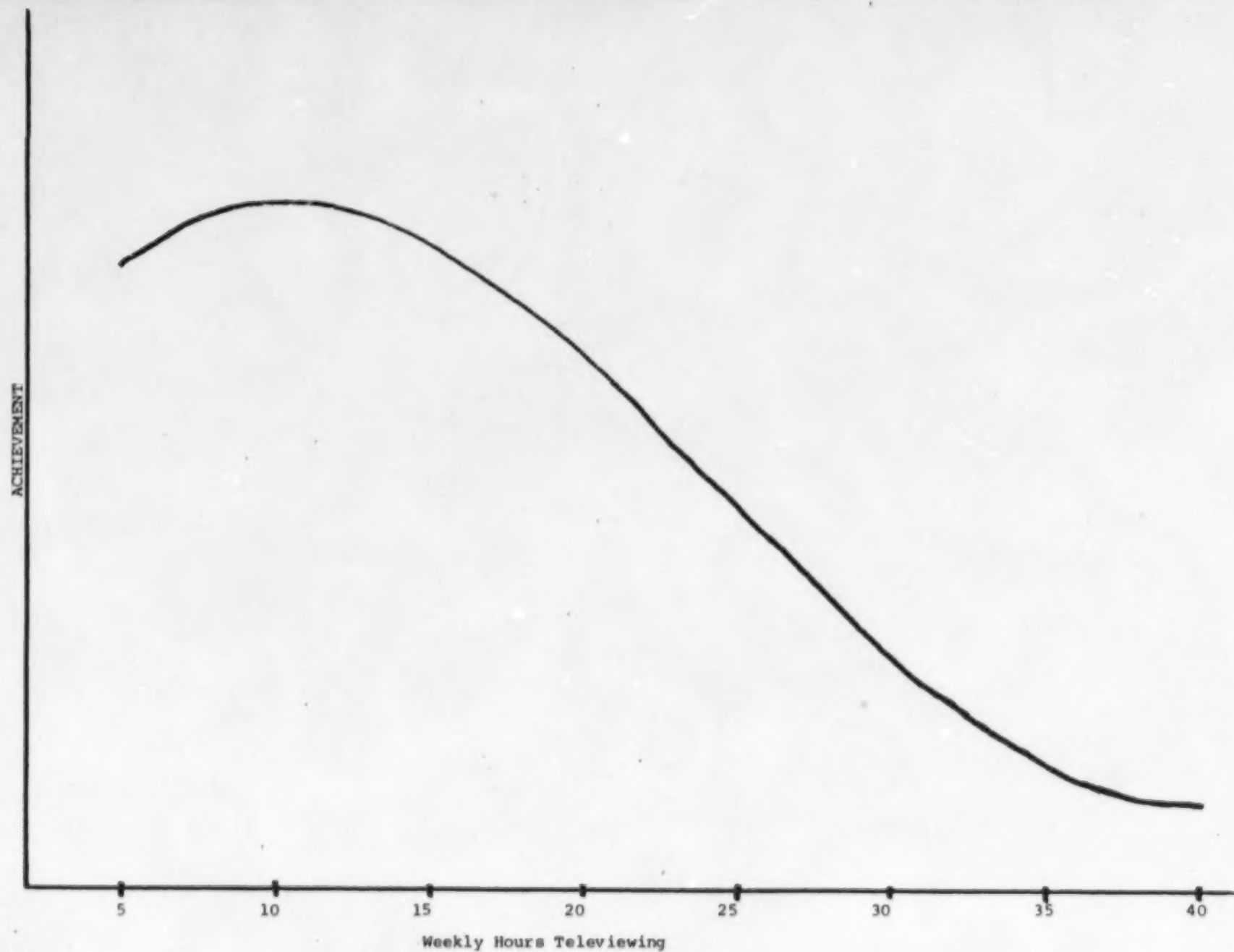


Figure 2. Estimated relationship of achievement to weekly hours televiewing
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